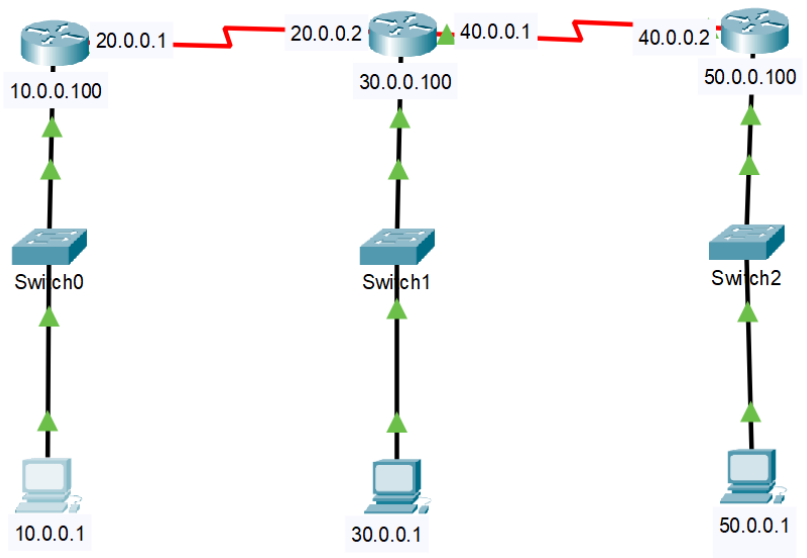
EIGRP (Enhanced Interior Gateway Routing Protocol)

"EIGRP, or Enhanced Interior Gateway Routing Protocol, is a Cisco-developed dynamic routing protocol that helps routers share information about the best paths to different networks. It quickly adapts to network changes, choosing efficient routes while using less bandwidth by only sending updates when something changes. EIGRP combines the benefits of distance-vector and link-state protocols, making it faster and more reliable for routing within large or complex networks."

An Autonomous System (AS) number in EIGRP is a unique identifier used to group routers that share routing information within the same routing domain. It acts like a process ID for EIGRP and helps routers know which other routers belong to the same EIGRP system so they can exchange routes. Only routers with the same AS number will share routes with each other.



Network Setup

- PC 1 IP: 10.0.0.1, default gateway: Router0 f0/0 - 10.0.0.100
- PC 2 IP: 30.0.0.1, default gateway: Router1 f0/0 - 30.0.0.100

- PC 3 IP: 50.0.0.1, default gateway: Router2 f0/0 - 50.0.0.100
- Router0 Serial s2/0: 20.0.0.1
- Router1 Serial s2/0: 20.0.0.2
- Router1 Serial s3/0: 30.0.0.1
- Router2 Serial s3/0: 30.0.0.2

EIGRP Configuration

- All routers use the same Autonomous System (AS) number 10 for EIGRP.
- Router0 commands:

```
router eigrp 10
network 20.0.0.0
network 10.0.0.0
```

- Router1 commands:

```
router eigrp 10
network 30.0.0.0
network 40.0.0.0
network 20.0.0.0
```

- Router2 commands:

```
router eigrp 10
network 40.0.0.0
network 50.0.0.0
```

Explanation

- The network commands on each router tell EIGRP which interfaces/networks to advertise.
- Router0 advertises networks connected to IP 10.0.0.x and the serial network 20.0.0.x.
- Router1 advertises 30.0.0.x (its local network), 40.0.0.x (serial link towards Router2), and 20.0.0.x (serial link to Router0).
- Router2 advertises connected networks 40.0.0.x and 50.0.0.x.

- EIGRP will discover neighbors between routers on serial and LAN interfaces because they share network statements in the same AS 10.

Result

- Once EIGRP is configured and neighbors are discovered, routing tables will include routes for all PC networks.
- PCs can ping each other successfully across routers by traversing EIGRP-learned routes.
- For example:
    - PC1 (10.0.0.1) can ping PC2 (30.0.0.1) and PC3 (50.0.0.1).
    - This confirms EIGRP is working properly to share routing information among routers.

These notes summarize the given setup and EIGRP configuration that facilitates inter-PC communication via routing over three routers.